CLAIMS

What is claimed is:

1. A power planer comprising:

a base having a reference surface;

a carriage assembly; and

a carriage elevation mechanism including four guide posts and an elevation mechanism, each of the guide posts being fixedly coupled to the base and having a threaded adjustment portion, the elevation mechanism having a plurality of threaded structures, each threaded structure being threadably engaged to the threaded adjustment portion of an associated guide post, each threaded structure being coupled to the carriage assembly such that rotation of the threaded structures relative to the guide posts affects an elevation of the carriage assembly relative to the reference surface.

2. The power planer of Claim 1, wherein the elevation mechanism includes a flexible drive member for engaging a sprocket that is coupled to each of the threaded structures and wherein rotation of the flexible drive member operably rotates the threaded structures in unison.

3. The power planer of Claim 2, wherein the flexible drive member is a chain.

4. The power planer of Claim 1, wherein the elevation mechanism further includes a plurality of input gears that rotate in response to a rotary input transmitted to the elevation mechanism, each input gear having a plurality of gear teeth that meshingly engage a plurality of gear teeth formed on an associated one of the threaded structures.

5. The power planer of Claim 4, wherein the input gears are worm gears.

6. The power planer of Claim 4, wherein the input gears are segregated into a first pair and a second pair, the first pair being coupled for rotation with a first axle, the second pair being coupled for rotation with a second axle, the second axle being coupled for rotation with the first axle.

7. The power planer of Claim 6, wherein rotary power is transmitted from the first axle to the second axle via a belt and a pair of pulleys, each of the pulleys being coupled for rotation with one of the first and second axles.

8. The power planer of Claim 6, further comprising a power take-off mechanism that is coupled to one of the first and second axles and operable for selectively transmitting rotary power to the one of the first and second axles to cause the threaded structures to rotate in a corresponding manner under a source of power to selectively position the carriage assembly.

9. The power planer of Claim 8, wherein the power take-off mechanism includes a gear train with an input idler gear, a first intermediate idler gear, a second intermediate idler gear and an output gear, the input idler gear receiving a rotary input, the first intermediate idler gear meshingly engaging the input idler gear and the second intermediate idler gear and the second gear, the output gear being configured to transmit rotary power to the one of the first and second axles, the gear train being at least partially rotatable about an axis between a neutral position, wherein rotary power is not transmitted through either of the first and second intermediate idler gears to the output gear, a first engaged condition, wherein one of the first and second intermediate idler gears is meshingly engaged to the output gear, and a second engaged condition, wherein the other one of the first and second intermediate idler gears is meshingly engaged to the output gear.

10. The power planer of Claim 9, wherein the first and second intermediate idler gears are mounted for rotation on a pivoting support plate.

11. The power planer of Claim 8, wherein the power take-off includes an input idler gear, an intermediate idler gear, a drive belt and an output gear, the output gear being rotatably coupled to the one of the first and second axles, the input idler gear receiving a source of rotary power and rotating in response thereto, the intermediate idler gear being meshingly engaged to the input idler gear, the drive belt being coupled to the intermediate idler gear and the output gear, the intermediate idler gear being movable between a first condition, wherein rotary power is transmitted through the drive belt to the output gear, and a second condition, wherein rotary power is transmitted directly from the intermediate idler gear to the output gear.

12. The power planer of Claim 11, wherein the intermediate idler gear meshingly engages the output gear when the intermediate idler gear is positioned in the second condition.

13. The power planer of Claim 11, wherein the intermediate idler gear includes a reduced diameter portion which is configured to engage the drive belt when the intermediate idler gear is positioned in the first condition.

14. The power planer of Claim 1, wherein the carriage assembly is locked to the threaded portions of the guide posts to secure the carriage assembly relative to the base.

15. The power planer of Claim 14, wherein each threaded structure includes a first threaded structure and a second threaded structure, the first and second threaded structures being coupled for rotation with one another but movable in an axial direction relative to one another and wherein the power planer further comprises a locking mechanism that is operable in a disengaged condition, which does not inhibit in unison rotation of the first and second threaded structures, and an engaged condition, wherein the first threaded structure is moved axially relative to the second threaded structure to lock the threaded structure against the threaded adjustment portion of the associated guide post and thereby inhibit in unison rotation of the first and second threaded structures.

16. The power planer of Claim 15, wherein relative axial movement is caused by rotation of at least one rotary cam mechanism.

17. The power planer of Claim 16, wherein each rotary cam mechanism includes an upper cam and a lower cam that abuts the upper cam, each of the upper and lower cams extending around the perimeter of an associated one of the threaded structures, the upper cam including a plurality of circumferentially extending tapered ramp members that are configured to matingly engage a plurality of circumferentially extending mating tapered ramp members, the upper and lower cams being movable between a neutral condition, wherein the tapered ramp members completely confront the mating tapered ramp members, and a locked position, wherein the tapered ramp members partially confront the mating tapered ramp members.

18. The power planer of Claim 17, further comprising a biasing spring for biasing the rotary cam mechanism into the neutral condition.

19. The power planer of Claim 17, further comprising at least one link, each link rotatably coupling an adjacent pair of the rotary cam mechanisms such that all of the rotary cam mechanisms are movable in unison between the disengaged condition and the engaged condition.

20. The power planer of Claim 15, wherein one of the first and second threaded structures includes a slotted aperture and the other one of the first and second threaded structures includes a coupling tab that is sized to engage the slotted aperture such that relative axial sliding movement between the first and second threaded structures is permitted while relative rotation between the first and second threaded structures is inhibited.

21. The power planer of Claim 1, further comprising a power take-off mechanism that is coupled to elevation mechanism and operable for selectively rotating the threaded structures under a source of power to selectively position the carriage assembly.

22. A power planer comprising:

a base having a reference surface;

a carriage assembly; and

a carriage elevation mechanism including a plurality of guide posts and an elevation mechanism, the plurality of guide posts being fixedly coupled to one of the base and the carriage assembly, each of the guide posts having a threaded adjustment portion, the elevation mechanism having a plurality of threaded structures, each threaded structure being threadably engaged to the threaded adjustment portion of an associated guide post, each threaded structure being coupled to the other one of the base and the carriage assembly such that rotation of the threaded structures relative to the guide posts affects an elevation of the carriage assembly relative to the reference surface;

wherein the elevation mechanism further includes a plurality of input gears that rotate in response to a rotary input transmitted to the elevation mechanism, each input gear having a plurality of gear teeth that meshingly engage a plurality of gear teeth formed on an associated one of the threaded structures;

wherein the input gears are segregated into a first pair and a second pair, the first pair being coupled for rotation with a first axle, the second pair being coupled for rotation with a second axle, the second axle being coupled for rotation with the first axle; and

wherein rotary power is transmitted from the first axle to the second axle via a belt and a pair of pulleys, each of the pulleys being coupled for rotation with one of the first and second axles.

23. The power planer of Claim 21, wherein the input gears are worm gears.

24. A power planer comprising:

a base;

a carriage assembly;

a carriage elevation mechanism having a plurality of guide posts and a plurality of nut assemblies, each of the guide posts being fixed to the base and having a threaded adjustment portion, each of the nut assemblies being coupled to the carriage assembly and threadably engaged to the threaded adjustment portion of an associated one of the guide posts; and

a locking mechanism that is operable in an engaged condition in which the nut assemblies are frictionally engaged to the threaded adjustment portions of the guide posts to inhibit rotation of the nut assemblies relative to the guide posts, the locking member also being operable in a disengaged condition which does not inhibit rotation of the nut assemblies relative to the guide posts.

25. The power planer of Claim 24, further comprising a power take-off mechanism that is coupled to the carriage elevation mechanism and operable for selectively rotating the nut assemblies under a source of power to selectively position the carriage assembly relative to the base.

26. The power planer of Claim 24, wherein the elevation mechanism includes a flexible drive member for engaging a plurality of teeth that are formed on each of the nut assemblies and wherein rotation of the flexible drive member operably rotates the threaded structures in unison.

27. The power planer of Claim 26, wherein the flexible drive member is a chain.

28. The power planer of Claim 24, wherein the elevation mechanism further includes a plurality of input gears that rotate in response to a rotary input transmitted to the elevation mechanism, each input gear having a plurality of gear teeth that meshingly engage a plurality of gear teeth formed on an associated one of the nut assemblies.

29. The power planer of Claim 28, wherein the input gears are worm gears.

30. The power planer of Claim 28, wherein the input gears are segregated into a first pair and a second pair, the first pair being coupled for rotation with a first axle, the second pair being coupled for rotation with a second axle, the second axle being coupled for rotation with the first axle.

31. The power planer of Claim 30, wherein rotary power is transmitted from the first axle to the second axle via a belt and a pair of pulleys, each of the pulleys being coupled for rotation with one of the first and second axles.

32. The power planer of Claim 31, further comprising a power take-off mechanism that is coupled to one of the first and second axles and operable for selectively transmitting rotary power to the one of the first and second axles to cause the nut assemblies to rotate in a corresponding manner under a source of power to selectively position the carriage assembly.

33. The power planer of Claim 32, wherein the power take-off mechanism includes a gear train with an input idler gear, a first intermediate idler gear, a second intermediate idler gear and an output gear, the input idler gear receiving a rotary input, the first intermediate idler gear meshingly engaging the input idler gear and the second intermediate idler gear and the second gear, the output gear being configured to transmit rotary power to the one of the first and second axles, the gear train being at least partially rotatable about an axis between a neutral position, wherein rotary power is not transmitted through either of the first and second intermediate idler gears to the output gear, a first engaged condition, wherein one of the first and second intermediate idler gears is meshingly engaged to the output gear, and a second engaged condition, wherein the other one of the first and second intermediate idler gears is meshingly engaged to the output gear.

34. The power planer of Claim 33, wherein the first and second intermediate idler gears are mounted for rotation on a pivoting support plate.

35. The power planer of Claim 32, wherein the power take-off includes an input idler gear, an intermediate idler gear, a drive belt and an output gear, the output gear being rotatably coupled to the one of the first and second axles, the input idler gear receiving a source of rotary power and rotating in response thereto, the intermediate idler gear being meshingly engaged to the input idler gear, the drive belt being coupled to the intermediate idler gear and the output gear, the intermediate idler gear being movable between a first condition, wherein rotary power is transmitted through the drive belt to the output gear, and a second condition, wherein rotary power is transmitted directly from the intermediate idler gear to the output gear.

36. The power planer of Claim 35, wherein the intermediate idler gear meshingly engages the output gear when the intermediate idler gear is positioned in the second condition.

37. The power planer of Claim 35, wherein the intermediate idler gear includes a reduced diameter portion which is configured to engage the drive belt when the intermediate idler gear is positioned in the first condition.